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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,319	10/22/2003	Philip D. Nguyen	2003-IP-010380U1	5926

71407 7590 02/09/2011

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EXAMINER	
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ART UNIT	PAPER NUMBER
1715	

NOTIFICATION DATE	DELIVERY MODE
02/09/2011	ELECTRONIC

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/691,319
Filing Date: October 22, 2003
Appellant(s): NGUYEN ET AL.

Iona N. Kaiser
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed December 23, 2010 appealing from the Office action mailed July 21, 2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 18-29, 31, 32, 35-46, 48-61 and 63-77 are pending in the application. Claims 20-24, 27, 37-41, 44, 50-61, 63, 63, 64, and 67 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Rejected claims are 18, 19, 25, 26, 28, 29, 31, 32, 35, 36, 42, 43, 45, 46, 48, 49, 65, 66 and 68-77.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

1. Claims 18, 19, 25, 28, 31, 32, 35, 36, 42, 45, 48, 49, 65, 66, 68-73, 75 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen et al (US 5,381,864) in view of Martin et al (US 4,969,523), further in view of Beck et al (US 4,493,875).

2. Claims 18, 19, 25, 28, 31, 32, 35, 36, 42, 45, 48, 49, 65, 66, 68-73, 75 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen et al '864 in view of Martin et al '523 and Beck et al '875, as applied above, and further in view of Sielcken et al (US 5585524).

3. Claims 18, 19, 25, 26, 28, 31, 32, 35, 36, 42, 43, 45, 48, 49, 65, 66, 68-75 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphey et al (US 5,128,390) in view of Martin et al '523 and Beck et al '875, further in view of Sielcken et al '524.

4. Claims 26, 43 and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen et al '864 in view of Martin et al '523 and Beck et al '875 or over Nguyen et al '864 in view of Martin et al '523 and Beck et al '875, further in view of Sielcken et al '524 or over Murphey et al '390 in view of Martin et al '523 and Beck et al '875, further in view of Sielcken et al '524, as applied above, and further in view of Murphey et al (US 4665988).

5. Claims 28, 29, 45, 46, 75 and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen et al '864 in view of Martin et al '523 and Beck et al '875 or over Nguyen et al '864 in view of Martin et al '523 and Beck et al '875, further in view of Sielcken et al '524 or over Murphey et al '390 in view of Martin et al '523 and Beck et al '875, further in view of Sielcken et al '524, as applied above, and further in view of McDaniel et al (US 20020048676).

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

5,381,864	NGUYEN ET AL	1-1995
4,969,523	MARTIN ET AL	11-1990
4,493,875	BECK ET AL	1-1985
5,585,524	SIELCKEN ET AL	12-1996
5,128,390	MURPHEY ET AL	7-1992
20020048676	MCDANIEL ET AL	4-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 18, 19, 25, 28, 31, 32, 35, 36, 42, 45, 48, 49, 65, 66, 68-73, 75 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen et al (US 5,381,864) in view of Martin et al (US 4,969,523), further in view of Beck et al (US 4,493,875).

Nguyen et al '864 discloses a method of treating a subterranean formation comprising continuously forming and injecting a treating composition into a well (See column 12, lines 46-66). The treating composition comprises a mixture including both a carrier fluid and a particulate <u>blend</u> suspended in the carrier fluid, the particulate blend consisting essentially of large particles having particle size of 40-4 mesh and small particles having particle size of 100-16 mesh (See Abstract; column 7, lines 29-34) as a proppant for fracturing , frac-pack or gravel packing (See column 7, lines 44-47), and a hardenable resin system which upon hardening will consolidate the particulate blend to form a hard permeable mass in the well (See column 15, lines 7-16; column 16, lines 52-59). The hardenable resin system will preferably also include one or more surfactants which will improve the wettability of the particulate materials used in the treating composition and will thereby enable the hardenable resin system to **rapidly coat** the particulate materials (See column 12, lines 23-31). The resin system can be added to the treating composition as a precoating on the individual particles of the particulate blend, or using generally any other means commonly employed in the art (See column 7, lines 36-43). Examples of particulate materials commonly used for gravel packing and frac-pack operations and as

fracturing proppants include: **sand**; glass beads; nut shells; metallic pellets or spheres; gravel; **synthetic resin pellets or spheres**; gilsonite; coke; sintered alumina; mullite; like materials; and **combinations thereof** (See column 2, lines 17-23; column 7, lines 44-48). Note that the size of the "large" particulate material overlaps the size of the "small" particulate material, i.e. the size of the "small" particulate material may be **similar** or **greater than about half the size** of the "large" particulate material and overlap claimed ranges. It is well settled that overlapping ranges are prima facie evidence of obviousness. Therefore, it would have been obvious to one having ordinary skill in the art to have selected the portion of Nguyen et al's range that corresponds to the claimed ranges.

Nguyen et al '864 fails to teach that: (i) the combination of large and small particles are combination of large dense particles such as sand and small particles of reduced density such as synthetic resin such as polystyrenedivinylbenzene (SVDB), (ii) the small SVDB particles being adhered to large dense particles.

As to (i), **Martin et al** teaches that in a method for gravel packing a well, injecting into a wellbore a slurry of particulate material in a carrier liquid, the particulate material comprising at least first particles having a first density less than the density of the carrier liquid and second particles having a second density which is greater than the density of the carrier liquid greatly increases the efficiency of gravel packing operations in both upper and lower portions of the wellbore and perforations over prior art methods while lowering the expense of such prior operations (See column 2, lines 11-38). The particles are preferably each selected from a group consisting of polystyrenedivinylbenzine (SVDB), ceramic beads, coke, bauxite and sand (See column 3, lines 20-35). In pumping the different density particles, one preferred method

comprises pumping the particles simultaneously as a **blend** of particles (See column 3, lines 45-55), e.g. a 50-50 mixture of sand of 20 to 40 mesh and SDVB beads of 18 to 50 mesh (See column 3, lines 65-68) or alternatively, pumping the differing density particles **separately** as distinct slugs of slurry, each slug containing particles having either a low or high density (See column 3, lines 57-60). Note that that low density SVDB beads having size overlapping size of sand, i.e. having **similar** size or **greater than about half the size** of the "large" particulate material are suitable for the use in a servicing fluid.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a combination of sand and synthetic resin particles such as SDVB beads in Nguyen et al '864 with the expectation of providing the desired increased efficiency of gravel packing operations in both upper and lower portions of the wellbore and perforations over prior art methods while lowering the expense of such prior operations, as taught by Martin et al.

As to (ii), Martin et al does not explicitly teach that sand/SVDB particulate material that closely matches density of carrier liquids is composite particle having dense core particles coated with low density particles. However, **Beck et al** teaches that adhering small particulates of reduced density to large dense particles (See column 1, lines 58-69) such that the resulting composite particle has density approaching density of a typical fracturing fluid allows to avoid the settling problem (See column 1, lines 58-62). The composite particles may be formed by (1) mixing the core particles with adhesive to provide adhesive-coated core particles, (2) while the adhesive is tacky, mixing the coated core particles with hollow microparticles (preferably hollow ceramic microparticles) to adhere a plurality to each coated core (See column 2, lines 55-68), and

(3) curing each adhesive composition to a nontacky state while keeping the individual coated core particles substantially out of adherent contact with each other (See column 3, lines 1-7).

In other words, Beck et al teaches that small reduced density particles may be adhered to large dense particles by (1) mixing the large dense core particles with an adhesive to provide adhesive-coated core particles, (2) while the adhesive is tacky, mixing the coated large dense core particles with reduced density small particles thereby adhering a plurality of the small particles to each coated core large dense particle.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have produced sand/SVDB particulate material that closely matches density of carrier liquids in Nguyen et al '864 in view of Martin et al as composite particles having dense core particles coated with low density particles with the expectation of avoiding the settling problem, as taught by Beck et al.

As to producing a treating composition on-the-fly, Nguyen et al '864 teaches that the components of the treating composition can be blended together using generally **any procedure** which is commonly used for preparing fracturing, frac-pack, and gravel packing compositions, e.g. by first mixing the gelling agent with brine or some other aqueous fluid to form gelled aqueous carrier liquid, transporting the gelled aqueous carrier liquid to a mixing apparatus such as a **continuous stream** tub mixer, and **continuously adding (streams of) the other components** (i.e. such as large particles, small particles and a hardenable resin system) and mixing with the gelled aqueous carrier fluid, and continuously drawing the resulting mixture from the mixer and injected the mixture into the well to a desired subterranean zone (See column 12, lines 46-66). Thus, Nguyen et al '864 does not limit its teaching to a specific order of mixing

a continuous stream of the gelled aqueous carrier fluid with continuous streams of the other components such as large particles, small particles and a hardenable resin system. It is well settled that selection of <u>**any order** of performing process steps</u> is prima facie obvious in the absence of new or unexpected results (In re Burhans, 154 F.2d 690, 69 USPQ 330 (CCPA 1946)); and selection of <u>**any order** of mixing ingredients</u> is prima facie obvious (In re Gibson, 39 F.2d 975, 5 USPQ 230 (CCPA 1930)). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed a treating composition in Nguyen et al ‘864 by continuously mixing streams of the other components to a carrier fluid in any order, i.e. in any combination of components, in the absence of new or unexpected results.

As discussed above, Nguyen et al ‘864 teaches that the hardenable resin system including one or more surfactants **rapidly coats** the particulate materials (See column 12, lines 23-31). The resin system can be added to the treating composition as a precoating on the individual particles of the particulate blend, or using generally any other means commonly employed in the art (See column 7, lines 36-43).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed a treating composition in continuous stream tub mixer of Nguyen et al ‘864 by first mixing together a stream of large dense particles in a carrier liquid with a stream of a hardenable resin system including one or more surfactants to **rapidly coat** the large dense particles thereby forming resin coated large dense particle; adding a stream of SVDB particles to the resin coated large dense particles with the expectation of providing the desired adhering of SVDB particles to the resin coated large dense particles since Beck et al teaches that mixing adhesive coated large dense core particles with reduced density small particles while the

adhesive is tacky, provides adhering a plurality of the small particles to each coated core large dense particle.

Thus, a treating composition comprising sand/SVDB particulate material that closely matches density of carrier liquids may be produced, for example, by providing a first flowing stream by mixing large dense particles with a hardenable resin system such that the hardenable resin system **rapidly coats** the large particles thereby forming claimed first flowing stream comprising **resin precoated** large dense particles having particle size in the range of from 4 to 100 U.S. mesh; providing a second flowing stream comprising small SVDB particles having particle size that is greater than about half the size of the coated particulate (i.e. greater than 8-200 U.S. mesh) with brine or some other aqueous fluid or gelled aqueous carrier liquid; combining the first flowing stream and the second flowing stream (thereby adhering a plurality of the small SVDB particles to each coated core large dense particle) to form a third flowing stream comprising large dense particles having adhered thereto small SVDB particles; combining the third flowing stream with gelled aqueous carrier liquid (servicing fluid) to form a fourth flowing stream of a treating composition; and placing the fourth flowing stream into the subterranean formation, with the expectation of providing the desired increased efficiency of gravel packing operations in both upper and lower portions of the wellbore and perforations over prior art methods while lowering the expense of such prior operations, as taught by Martin et al, and with the expectation of avoiding the settling problem, as taught by Beck et al since Nguyen et al '864 does not limit its teaching to a specific order of adding continuous streams of various components to a continuous stream of a servicing carrier fluid.

Note that the hardenable resin system of Nguyen et al '864 includes phenolic/aldehyde resin system (See column 10, lines 35-49) and any epoxy resin system such as claimed glycidyl ethers and epoxy novolac resins (See column 10, lines 56-60), i.e. the same hardenable resins as coating resins disclosed in the Appellants' specification (See spec. page 5, P15-16).

One ordinary skill in the art would reasonably expect that at least some of the uncoated SVDB particles would adhere to the tacky polyepoxide resin coating on the surface of the large dense particles for at least the reason that according to Nguyen et al '864, particles of sand or of a synthetic resin are rapidly coated with uncured (i.e. tacky) resin when combined with the resin in a flowing stream, i.e. the particles of any material have high affinity to the tacky resin, and thus, the SVDB particles would stick to the tacky resin.

It is the Examiner's position that combining the first flowing stream comprising resin coated large sand particles and the second flowing stream comprising small SVDB particles reads on **claimed step of allowing** the small particles to adhere to the surface of the resin coated large particles in a formed third flowing stream since the Appellants' specification discloses that a density reducing material (i.e. small particles) is allowed to adhere to the surface a large particles coated with the same type of resin by **simply combining** a stream comprising resin coated particles with a stream comprising particles to be adhered to the surface of the resin coated particles: namely, a flowing stream is continuously introduced into another flowing stream so that the streams are combined and mixed while continuing to flow as a single stream as part of the on-going treatment (See spec. page 13, P36). Note that the Appellants' specification does not disclose any special treatment of a combined first stream carrying resin coated particles

and a second stream carrying reduced density particles for the reduced density particles to adhere to the surface of resin coated particles.

Thus, claimed invention would have been obvious over the cited prior art since all three basic criteria of a prima facie case of obviousness has been met: First, there is some suggestion or motivation in the references themselves to modify the reference or to combine reference teachings; second, there is a reasonable expectation of success; and finally, the references when combined suggest all the claim limitations.

As to claims 42 and 73, Nguyen et al '864 teaches that examples of epoxy resins preferred for use in the present invention include: diglycidyl ethers of bisphenol-A; diglycidyl ethers of bisphenol-F; glycidyl ethers of aminophenols; glycidyl ethers of methylenedianiline; and epoxy novolac resins (See column 10, lines 56-60). The epoxy resins will preferably have epoxide equivalent weights (EEW) in the range of from about 90 to about 300 (claimed polyepoxide resin) (See column 10, lines 60-66).

Claims 18, 19, 25, 28, 31, 32, 35, 36, 42, 45, 48, 49, 65, 66, 68-73, 75 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen et al '864 in view of Martin et al '523 and Beck et al '875, as applied above, and further in view of Sielcken et al (US 5585524).

If it could be argued that steps of mixing of various component streams in a tub mixer of Nguyen et al '864 is not mixing "on-the-fly" as described in the Appellants' specification, the Examiner applied additionally Sielcken et al to show that claimed mixing steps may be carried out in a tubular reactor as well.

Sielcken et al teaches that a continuous process can be carried out using a stirred tank reactor (CSTR), a tubular reactor, a non-stirred bubble column and an internal or external gas-lift loop reactor (See column 5, lines 61-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have carried out a continuous process of Nguyen et al '864 in a continuous stream tubular reactor instead of a continuous stream tub mixer since Sielcken et al teaches that a continuous process can be carried out using a CSTR or a tubular reactor.

Note that in the **continuous tubular reactor** the first flowing stream and second flowing stream would be combined and mixed while continuing to flow as a stream.

Claims 18, 19, 25, 26, 28, 31, 32, 35, 36, 42, 43, 45, 48, 49, 65, 66, 68-75 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphey et al (US 5,128,390) in view of Martin et al '523 and Beck et al '875, further in view of Sielcken et al '524.

Murphey et al '390 discloses a method of treating a subterranean formation comprising substantially continuously mixing an aqueous gelled carrier liquid with uncoated particulate material, a hardenable polyepoxide resin, and an improved surfactant as well as additional components and other surfactants and introducing a resulting mixture into a subterranean formation over the period of time necessary to deposit a desired quantity of resin coated particulate material in the formation (See column 2, lines 16-47). In accordance with the improved methods, a substantially continuous stream of particulate material in a gelled aqueous carrier liquid is **instantaneously** coated with the polyepoxide resin composition when combined with a continuous stream of the resin in the presence of the improved surfactant which is also

continuously added to the gelled aqueous carrier liquid-resin-particulate material mixture (See column 2, lines 56-66; column 4, lines 20-26). Preferably, the particulate material is of a particle size in the range of from about **10 to about 70 mesh**, U.S. Sieve Series (See column 4, lines 3-19). Murphey et al '390 teaches that the particulate material is usually sand (high density particles) but other types of particulate material such as glass beads (reduced density particles), sintered bauxite, etc. can be used if desired (See column 4, lines 3-6).

It is well settled that it is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition which is to be used for the very same purpose. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used any combination of different particles including a combination of sand (high density particles) with glass beads (reduced density particles) since each of them is useful for the same purpose.

Murphey et al '390 fails to teach that the particulate material is a combination of particles having high density and particles having reduced density particles such as polystyrenedivinylbenzene (SVDB) where SVDB particles are adhered to the surface of resin coated large dense particles.

Martin et al and **Beck et al** are applied here for the same reasons as above.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a combination of sand and synthetic resin particles such as SDVB beads in Murphey et al '390 with the expectation of providing the desired increased efficiency of gravel packing operations in both upper and lower portions of the wellbore and

perforations over prior art methods while lowering the expense of such prior operations, as taught by Martin et al.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have produced sand/SVDB particulate material that closely matches density of carrier liquids in Nguyen et al '864 in view of Martin et al as composite particles having dense core particles coated with low density SVDB particles with the expectation of avoiding the settling problem, as taught by Beck et al.

As to producing a treating composition on-the-fly, as discussed above, Murphey et al '390 teaches producing a treating composition on-the-fly. Murphey et al '390 does not teach mixing ingredients in claimed order. However, it is well settled that: selection of **any order** of performing process steps is prima facie obvious in the absence of new or unexpected results (In re Burhans, 154 F.2d 690, 69 USPQ 330 (CCPA 1946)); and selection of **any order** of mixing ingredients is prima facie obvious (In re Gibson, 39 F.2d 975, 5 USPQ 230 (CCPA 1930)). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed a treating composition in Murphey et al '390 by continuously mixing streams of the other components to a carrier fluid in any order, i.e. in any combination of components, in the absence of new or unexpected results.

Murphey et al '390 does not explicitly disclose that a continuous process is carried out by mixing flowing streams of components (i.e. as in a tubular reactor).

Sielcken et al teaches that a continuous process can be carried out using a stirred tank reactor (CSTR), a tubular reactor, a non-stirred bubble column and an internal or external gas-lift loop reactor (See column 5, lines 61-65). Therefore, it would have been obvious to one of

ordinary skill in the art at the time the invention was made to have carried out a continuous process of Murphey et al '390 in a continuous stream tubular reactor instead of a continuous stream tub mixer since Sielcken et al teaches that a continuous process can be carried out using a CSTR or a tubular reactor. Note that in the **continuous tubular reactor** the first flowing stream and second flowing stream would be combined and mixed while continuing to flow as a stream.

Since Murphey et al '390 does not limit its teaching to a specific order of mixing continuous streams of various components, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed a treating composition in continuous stream tubular reactor of Murphey et al '390 in view of Sielcken et al by first mixing together a stream of large dense particles in a carrier liquid with a stream of a hardenable resin system including one or more surfactants to **instantaneously coat** the large dense particles thereby forming resin coated large dense particle; adding a stream of SVDB particles to the resin coated large dense particles with the expectation of providing the desired adhering SVDB particles to the resin coated large dense particles since Beck et al teaches that mixing adhesive coated large dense core particles with reduced density small particles while the adhesive is tacky, provides adhering a plurality of the small particles to each coated core large dense particle.

Thus, a treating composition comprising sand/SVDB particulate material that closely matches density of carrier liquids may be produced, for example, by providing a first flowing stream by mixing large dense particles with a hardenable resin system such that the hardenable polyepoxide resin system **instantaneously coats** the large particles thereby forming claimed first flowing stream comprising **resin precoated** large dense particles having particle size in the range of from 10 to 70 U.S. mesh; providing a second flowing stream comprising small SVDB

particles with brine or some other aqueous fluid or gelled aqueous carrier liquid; combining the first flowing stream and the second flowing stream (thereby adhering a plurality of the small SVDB particles to each coated core large dense particle) to form a third flowing stream comprising large dense particles having adhered thereto small SVDB particles; combining the third flowing stream with gelled aqueous carrier liquid (servicing fluid) to form a fourth flowing stream of a treating composition; and placing the fourth flowing stream into the subterranean formation, with the expectation of providing the desired increased efficiency of gravel packing operations in both upper and lower portions of the wellbore and perforations over prior art methods while lowering the expense of such prior operations, as taught by Martin et al, and with the expectation of avoiding the settling problem, as taught by Beck et al since Murphey et al '390 does not limit its teaching to a specific order of adding continuous streams of various components to a continuous stream of a servicing carrier fluid.

Note that the hardenable resin system of Murphey et al '390 includes a hardenable polyepoxide resin (See column 4, lines 20-28), i.e. the same hardenable resins as claimed in claims 25, 42 and 73. It is therefore, the Examiner's position that combining the first flowing stream comprising resin coated large sand particles and the second flowing stream comprising small SVDB particles reads on **claimed step of allowing** the small particles to adhere to the surface of the resin coated large particles in a formed third flowing stream since the Appellants' specification discloses that a density reducing material (i.e. small particles) is allowed to adhere to the surface a large particles coated with the same type of resin by **simply combining** a stream comprising resin coated particles with a stream comprising particles to be adhered to the surface of the resin coated particles: namely, a flowing stream is continuously introduced into another

flowing stream so that the streams are combined and mixed while continuing to flow as a single stream as part of the on-going treatment (See spec. page 13, P36). Note that the Appellants' specification does not disclose any special treatment of a combined first stream carrying resin coated particles and a second stream carrying reduced density particles for the reduced density particles to adhere to the surface of resin coated particles.

Thus, claimed invention would have been obvious over the cited prior art since all three basic criteria of a prima facie case of obviousness has been met: First, there is some suggestion or motivation in the references themselves to modify the reference or to combine reference teachings; second, there is a reasonable expectation of success; and finally, the references when combined suggest all the claim limitations.

As to claim 42, Murphey et al '390 teaches that polyepoxide is bisphenol A-epichlorohydrin resin (See column 4, lines 34-36).

Claims 26, 43 and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen et al '864 in view of Martin et al '523 and Beck et al '875 or over Nguyen et al '864 in view of Martin et al '523 and Beck et al '875, further in view of Sielcken et al '524 or over Murphey et al '390 in view of Martin et al '523 and Beck et al '875, further in view of Sielcken et al '524, as applied above, and further in view of Murphey et al (US 4665988).

The cited prior art fails to teach claimed solvent.

Murphey et al '988 teach that the use of ethylene glycol butyl ether (See column 5, line 54) as a solvent for dissolving epoxy resins (See column 5, lines 47-48) such as bisphenol A-epichlorohydrin (See column 5, line 60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used ethylene glycol butyl ether as a solvent in the cited prior art since Murphey et al '988 teach that the use of ethylene glycol butyl ether as a solvent for dissolving epoxy resins such as bisphenol A-epichlorohydrin, and Nguyen et al '864 does not limit its teaching to particular solvents.

Claims 28, 29, 45, 46, 75 and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen et al '864 in view of Martin et al '523 and Beck et al '875 or over Nguyen et al '864 in view of Martin et al '523 and Beck et al '875, further in view of Sielcken et al '524 or over Murphey et al '390 in view of Martin et al '523 and Beck et al '875, further in view of Sielcken et al '524, as applied above, and further in view of McDaniel et al (US 20020048676).

The cited prior art fails to teach that the binder could be glycidyl either or epoxies such as bisphenol A-epichlorohydrin resin (Claim 42) or a polyester resin or a natural resin (Claims 45-46).

McDaniel et al teaches that a liquid resole phenol/folmaldehyde resin (See P53, 70, 98) or glycidyl either or epoxies such as bisphenol A-epichlorohydrin resin (See P187) or a polyester resin (See P70) or a natural resin (See P75) can be used for binding particles together. In other words, the resins are functionally equivalent.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a resin composition comprising glycidyl either or epoxies such as bisphenol A-epichlorohydrin resin or a polyester resin or a natural resin in the cited prior art

instead of a liquid resole phenol/folmaldehyde resin with the expectation of providing the desired coated particles since McDaniel et al teaches that a liquid resole phenol/folmaldehyde resin or glycidyl either or epoxies such as bisphenol A-epichlorohydrin resin or a polyester resin or a natural resin can be used for binding particles together.

(10) Response to Argument

Applicant's arguments have been fully considered but they are not persuasive.

A. Rejection of Claims 18-19, 25, 28, 31-32, 35-36, 42, 45, 48-49, 65-66, 68- 73, 75 and 77 under 35 U.S.C. § 103(a) over Nguyen in view of Martin and Beck

1. <u>The Proposed Combination Renders the Prior Art Unsatisfactory for Its Intended Purpose</u>

Appellants submit that the proposed combination of Beck with Nguyen and/or Martin would render the invention of Nguyen unsatisfactory for its intended purpose. With respect to Nguyen, the invention is directed towards the use of a treating composition comprising a particulate blend. (See Nguyen Abstract). The use in the prior art described in Nguyen of a single sized particulate involves a trade-off between using a large particulate and a small particulate. (Id, at col. 4, ll. 18-36). Large particulates provide high initial permeability but allow for the migration of formation fines into the proppant bed. (Id.). Small particulates prevent the migration of formation sand and fines but have relatively low permeabilities and therefore yield substantially reduced production rates. (Id.). The solution to using a single sized particulate as disclosed in Nguyen is the use of a particulate blend comprising a large particulate material and a small particulate material. (Id. at col. 7, ll. 29-37). The blend allows the individual particulates to form a pack in the formation that "provides a high permeability flow path to the wellbore and prevent[s] the migration of formation sand and fines through the formation fractures." (Id. at col. 13, ll. 18-34). Example 1 of Nguyen demonstrates the improved results obtained using a blend of particulates relative to samples of both relatively large particulates alone and relatively small particulates alone. (Id. at col. 18, l. 24 - col. 19, l. 11). Thus, the principle of operation of Nguyen

clearly relies upon the inclusion of a blend of particulates, and the particulates of Nguyen would not be satisfactory for their intended purpose if only a single sized particulate were to be used. The Examiner has also argued that Nguyen can be used with a hardenable resin system and that such a system forms a coated particulate. (Final Office Action at 5). Appellants agree that Nguyen discloses the use of a hardenable resin system in an embodiment, but disagree that such a system results in a coated particulate. The Examiner's main argument appears to be that a resin coated particulate would result in the adhesion of the various particles in the stream. (Final Office Action at 5-6). Further, the Examiner argues that "Nguyen teaches nowhere that the large particulate material and a small particulate material should be present separately from each other in a stream in the presence of the hardenable (adhesive) resin .... " (Final Office Action at 5). Nguyen does disclose throughout its description that the large particulate material and the small particulate material should be separate. Specifically, Nguyen defines the "particulate blend" by stating that the "particulate blend comprises a large particulate material and a small particulate material." (Nguyen, col. 7, ll. 32-34). When discussing the use of an additional hardenable resin, Nguyen states that "the resin system can be (a) added to the treating composition at the well site, (b) included as a precoating on the individual particles of the particulate blend, . ." (Id., col. 7, ll. 37-41). Thus, the hardenable resin can be coated on individual particles, which comprise both large and small particulates. In describing the hardenable resin, Nguyen states that "the hardenable resin system will be included in the treating composition in an effective amount for consolidating the particulate blend to form a hard permeable mass within the subterranean zone being treated." (Id., col. 10, ll. 41-45 (emphasis added)). Thus, the particulates comprise a small particulate and a large particulate, even if coated with a hardenable resin, until they reach the subterranean zone being treated before they are consolidated. The further specific embodiments all describe the particulate blend as being consolidated within the zone of interest (e.g., the subterranean formation (Nguyen, col. 10, ll. 41-45), the formation fractures (id., col. 13, ll. 35-39), around a screening device (id., col. 15, ll. 7-13)). Thus in contrast to the Examiner's assertion, Nguyen does describe that the large particulate material and the small particulate material are present separately from each other in the stream before being placed in the zone of interest, even in the presence of a hardenable resin.

The Examiner respectfully disagrees with this argument. First of all, Nguyen teaches nowhere that the large particulate material and the small particulate material should be kept separate in a treating composition. Second, Nguyen et al teaches that the gravel pack 16, which is comprised of a large particulate/small particulate **blend** (See column 16, lines 45-51) can be a **consolidated** particulate bed (i.e. consolidated bed of the particulate blend) which has been consolidated using a hardenable resin composition (See column 16, lines 53-59 and claims 4 and 12 of Nguyen). Further, Nguyen et al defines the term "consolidatable resin-coated particulate material" as a particulate material (e.g., a proppant, a particulate gravel packing material, or a particulate material used for frac-pack operations) which is **coated** with a bonding-type resin composition (e.g., an epoxy resin composition, a phenol/aldehyde type resin composition, etc.) (See column 2, lines 34-40). Typically, the consolidatable resin-coated composition particulate material will be injected into a subterranean zone using procedures whereby the resin does not substantially harden until after the particulate material has been delivered to a desired location within the formation (See column 2, lines 40-47). Finally, Example II shows six **consolidated** particulate beds (i.e., beds 7-12) consisting of mixtures of 12/20 mesh resieved Ottawa frac sand and 50/70 mesh resieved Ottawa frac sand were prepared prepared by blending the particulate blend with a gelled aqueous carrier fluid and an epoxy resin system (i.e., a resin system containing a diglycidyl ether of bisphenol-A) in a beaker using a stirring guard and blade apparatus.

In other words, a consolidatable resin-coated large particulate/small particulate "blend" of Nguyen et al is a blend comprising particles **coated** with a bonding-type resin composition (e.g., an epoxy resin composition, a phenol/aldehyde type resin composition, etc.); and the

coated particles in the blend are injected into a formation in uncured condition, which forms a consolidated particulate bed within the formation upon curing the coating resin in the blend.

Obviously, the coated large particulate/small particulate blend of Nguyen may have any possible structures as long as it "provides a high permeability flow path to the wellbore and prevents the migration of formation sand and fines through the formation fractures." (Id. at col. 13, ll. 18-34) compared to the prior art single sized particulate where large particulates provide high initial permeability but allow for the migration of formation fines into the proppant bed, and small particulates prevent the migration of formation sand and fines but have relatively low permeabilities and therefore yield substantially reduced production rates.

Since Nguyen teaches nowhere that the large particulate material and a small particulate material should be present separately from each other in a stream in the presence of the hardenable (adhesive) resin, the possible structures of the blend would include aggregates of the large and small particles where small particles are adhered to the surface of the large particles since aggregates would be capable of providing a high permeability flow path to the wellbore and preventing the migration of formation sand and fines through the formation fractures, as required by Nguyen.

Thus, in contrast to Appellants' assertion, the large particulate/small particulate "blend" of Nguyen et al <u>does not exclude</u> aggregates of the large and small particles, e.g. aggregates where small particles are adhered to the surface of the large particles.

Appellants note that the Examiner's arguments that the particles would adhere to one another does not contain a reference to a particular teaching in the cited prior art. It would appear that the Examiner is relying on inherency to argue that two resin coated particulates would

adhere to form a coated particulate. However, simply having two resin coated particulates in a solution would not necessarily cause the two particulates to adhere--an interpretation that would further conflict with the express teachings of Nguyen for placing a particulate blend, rather than a composite particulate, into the formation. As stated by the Court of Appeals for the Federal Circuit "[t]o establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." (In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999); see also MPEP § 2112). Thus, the fact that two resin coated particulates may adhere in a treatment fluid is insufficient to inherently disclose a reduced-density, coated particulate.

The Examiner respectfully disagrees with this argument. It is noted that only one paragraph 36 of the Appellants' specification is dedicated to claimed embodiment of "real-time" on-the-fly mixing of different particles. The paragraph 36 describes the "real-time" on-the-fly mixing to mean that a flowing stream is continuously introduced into another flowing stream so that the streams are combined and mixed while continuing to flow as a single stream as part of the on-going treatment: For instance, where a two-component epoxy based resin comprising a hardenable resin component and a hardening agent component is used, the liquid hardenable resin component and liquid hardening agent component may be combined on-the-fly and then coated directly onto the particulate on-the-fly and then that coated particulate can be further coated with a density-reducing material on-the-fly. Thus, the Appellants' specification describes mixing flowing streams with mentioning <u>no</u> specific techniques or conditions of combining flowing streams in order to coat dense particles with a resin and to adhere small particles to the resin coated dense particles. <u>Therefore, as long as prior art references describe claimed steps of</u>

combining flowing streams of particles, resins and carrier fluids, coating dense particles with a resin or adhering small particles to the coated dense particles would flow naturally from the suggestion of prior art.

Appellants submit that in contrast to the teaching of a particulate blend in Nguyen, Beck is directed to a composite proppant formed by mixing core particles with adhesive and coating the core particles with hollow microparticles to adhere the microparticles to the coated core. (Beck at col. 2, l. 65 - col. 3, l. 7). These particles are cured to form a single sized particulate prior to being placed in a wellbore. (Id.). Thus, applying the teachings of Beck to the particulate blend of Nguyen would result in the adhesion of the relatively small particulates to the relatively large particulates prior to being placed in the wellbore. In other words, the combined particulates would have a single size, which is contrary to the purpose and functionality of the particulate blend of Nguyen. It should therefore be clear that in forming a rejection based on a combination of Nguyen in view of Beck, the proposed modification renders the particulate blend, which would become agglomerated, unsatisfactory for its intended purpose. Thus, there is no suggestion or motivation to make the proposed modification. See MPEP 2143.01(V). In response to the Appellants' statements, the Examiner has indicated that "one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references." (Final Office Action at 5). Appellants specifically note that under MPEP §2143, Appellants are arguing against the ability to combine the references and not against the references individually. To the extent that Nguyen and Beck cannot be combined, the combination argued by the Examiner cannot be used to form a prima facie case of obviousness.

The Examiner respectfully disagrees with this argument. As discussed above, Nguyen teaches that compared to single sized particles, the consolidated bed of large and small particles is capable of providing a high permeability flow path to the wellbore and preventing the migration of formation sand and fines through the formation fractures, compared to single sized

particles (See above). The composite particles of Beck are also consolidated large and small particles as in Nguyen since they comprise large dense particles consolidated with small particles. Therefore, in contrast to Applicants' assertion, the composite particles of Beck are not single sized particles, but consolidated large and small particles as in Nguyen.

2. Nguyen, Martin, and Beck Do Not Disclose "Allowing the Density Reducing Material to Adhere to a Surface of the Coated Particulate to Create at Least One Reduced-Density, Coated Particulate in the Third Flowing Stream" and Combining the Third Stream With a Carrier Fluid Prior to Being Placed in the Subterranean Formation

Appellants submit that the combination of Nguyen, Martin, and Beck does not disclose all of the elements of independent claims 18, 35, or 68. Even if Nguyen could be modified by the teachings of Martin--a position the Appellants do not adopt--the references would not disclose at least "allowing the density reducing material to adhere to a surface of the coated particulate to create at least one reduced-density, coated particulate in the third flowing stream" and combining the third stream with a carrier fluid prior to being placed in the subterranean formation as required by independent claims 18, 35, and 68. The Examiner argues that "according to Nguyen et al. the hardenable epoxy resin rapidly coats particulate materials such as sand, glass beads or synthetic resin pellets in a treating composition in the presence of the gelled aqueous carrier liquid and a surface active agent . . ." (Final Office Action at 5-6 (emphasis added)). Appellants note that even if two particulates coated with resin were to collide and adhere--a proposition that Appellants assert would not necessarily occur--the teachings of Nguyen indicated that they would do so in the gelled aqueous carrier liquid containing a surface active agent (i.e., a servicing fluid). Even if the Examiner's argument were to be accepted, Nguyen does not disclose the formation of "at least one reduced-density, coated particulate in the third flowing stream," which must occur prior to the third flowing stream being combined with a servicing fluid to form the fourth flowing stream. Further, Martin does not describe coating a particulate at all. Specifically, Martin, is directed towards the use of at least first particles having a first density and second particles having a second density (i.e., two separate particles), and thus does not

describe a composite particle. (See Martin Abstract). Nor does Martin disclose a resin being used. As Martin does not disclose any type of composite, reduced density particulate, Martin cannot disclose "allowing the density reducing material to adhere to a surface of the coated particulate to create at least one reduced-density, coated particulate in the third flowing stream" and combining the third stream with a carrier fluid prior to being placed in the subterranean formation as required by independent claims 18, 35, and 68. Beck also does not describe combining a particulate with a servicing fluid. Thus, Beck cannot disclose "allowing the density reducing material to adhere to a surface of the coated particulate to create at least one reduced-density, coated particulate in the third flowing stream" and combining the third stream with a carrier fluid prior to being placed in the subterranean formation as required by independent claims 18, 35, and 68. Thus, the combination of Nguyen in view of Martin, further in view of Beck fails to obviate claims 18, 35, and 68. Claims 19, 25, 28, 31-32, 36, 42, 45, 48-49, 65-66, 69-73, 75 and 77 depend, either directly or indirectly, from independent claims 18, 35, and 68 and therefore include all the limitations of independent claims 18, 35, and 68. Thus, claims 18-19, 25, 28, 31-32, 35-36, 42, 45, 48-49, 65-66, 68-73, 75, and 77 are patentable over the combination of Nguyen, Martin, and Beck. See 35 U.S.C. § 112 p. 4 (2004). Accordingly, for at least these reasons, Appellants respectfully request withdrawal of this rejection with respect to claims 18-19, 25, 28, 31-32, 35-36, 42, 45, 48-49, 65-66, 68-73, 75 and 77.

The Examiner respectfully disagrees with this argument. As discussed above, neither the Appellants' specification nor claims disclose **how** to "allow the density reducing material to adhere to a surface of the coated particulate to create at least one reduced-density" when continuously mixing appropriate flowing streams. Thus, if prior art references describe continuous mixing of appropriate flowing streams, they read on Appellants' claimed process. Since continuous mixing of appropriate flowing streams would be obvious over the cited prior art, Appellants' claimed process would be obvious over Nguyen, Martin, and Beck.

B. Rejection of Claims 18-19, 25, 28, 31-32, 35-36, 42, 45, 48-49, 65-66, 68- 73, 75 and 77 under 35 U.S.C. § 103(a) over Nguyen in view of Martin, Beck and Sielcken

Appellants submit that the teachings of Sielcken do not make up for the deficiencies in the proposed combination. Specifically, the Examiner cites Sielcken for the alleged teaching of using a CSTR to carry out the continuous mixing process of Nguyen. Sielcken does not disclose at least "allowing the density reducing material to adhere to a surface of the coated particulate to create at least one reduced-density, coated particulate in the third flowing stream" and combining the third stream with a carrier fluid prior to being placed in the subterranean formation as required by independent claims 18, 35, and 68. Claims 19, 25, 28, 31-32, 36, 42, 45, 48- 49, 65-66, 69-73, 75 and 77 depend, either directly or indirectly, from independent claims 18, 35, and 68 and therefore include all the limitations of independent claims 18, 35, and 68. Thus, claims 18-19, 25, 28, 31-32, 35-36, 42, 45, 48-49, 65-66, 68-73, 75 and 77 are patentable over the combination of Nguyen, Martin, Beck, and Sielcken. See 35 U.S.C. § 112 I[4 (2004) Accordingly, for at least these reasons, Appellants respectfully request withdrawal of this rejection with respect to claims 18-19, 25, 28, 31-32, 35-36, 42, 45, 48- 49, 65-66, 68-73, 75 and 77.

The Examiner respectfully disagrees with this argument. for the reasons discussed above.

C. Rejection of Claims 18-19, 25-26, 28, 31-32, 35-36, 42-43, 45, 48-49, 65- 66, 68-75 and 77 under 35 U.S.C. § 103(a) over IVlurphey '390 in view of Martin, Beck and Sielcken

Appellants submit that the cited references teach away from their combination, and thus, the Examiner has not established a prima facie case of obviousness. Specifically, the Examiner states that the combination used to reject the claims could be based on Murphey '390. Murphey '390 would then be modified to include the particle blend of Martin and then the particle blend would be combined to form a single composite particulate using the teachings of Beck. In essence, the Examiner has identified individual elements in the prior art and cobbled them together to form the present rejection. However, the references used by the Examiner teach away from their combination. Even if Murphey '390 and Martin could be combined, the teachings of

Martin contradict those of Beck. With respect to Martin, the invention is directed towards the use of at least first particles having a first density and second particles having a second density (i.e., two separate particles). (See Martin Abstract). The particles can be injected as a blend or as sequential sluqs. (Id., (emphasis added)). The two different densities are preferably chosen so that the "first density [is] less than the density of the carrier liquid and ... [the] second density [] is greater than the density of the carrier liquid." (Martin at col. 2, ll. 18-20). In this manner, the upper perforations are packed predominantly by the less dense particles while the lower perforations are predominantly packed by the more dense particles. In other words, the less dense particles predominantly float to pack the top perforations while the more dense particles predominantly sink to pack the lower perforations. Martin thus relies on the density differences between the particles to improve the packing efficiency in the perforations relative to using a single density particle such as sand. (See Id. at col. 4, ll. 9-14). Thus, the principle of operation of Martin clearly relies upon the inclusion of a blend of at least two separate particles or sequential of two separate particles with distinct differences in density relative to the carrier fluid. The particles of Martin would not function the same if only a single sized particle with a single density were used. The Examiner argues that "Martin on the other hand teaches that proppant particles should have a density closely matching the density of carrier fluids to avoid settling problem by combining stream containing dense particles such as sand with stream containing low density particles such as SVDB. Although Martin et al. does not explicitly teach that sand/SVDB particulate material that closely matches density of carrier liquids is composite particle having dense core particles coated with low density particles, one of ordinary skill in the art would easily recognize that the dense sand particles and the SVDB particles have to form composite particles in order to achieve the desired 'middle' density matching density of the carrier liquid." (Final Office Action at 6-7). Appellants note that this appears to be a mischaracterization of Martin. Martin is actually directed to solving the problem presented by "the use of particulate materials and carrier liquids with more closely matched density .... " (Martin, col. 1, I1. 63-68). Martin specifically mentions that "the cost of these specialized materials greatly exceeds the cost of simple sand packing materials." (Martin, col. 2, I1.6-8). This is the reason that Martin is directed towards a mixture of individual particles with two distinct densities and not a single, composite particle. At no point does Martin mention the

formation of a composite particle, the use of any type of binder to form a composite particle, or the need for a particle of a "middle" density. Such a characterization ignores the states purpose of Martin. Thus, Martin is directed towards the use of at least two separate particles, and not any type of composite particle. As noted above in Section VII.A, Beck is directed to composite proppant formed by mixing core particles with adhesive and coating the core particles with hollow microparticles to adhere the microparticles to the coated core. (Beck at col. 2, I. 65 - col. 3, I. 7). These particles are cured to form a single sized particulate with a density approaching the density of the carrier fluid. (Id.). Thus, applying the teachings of Beck to the particle blend or sequential slugs of Murphey '390 in view of Martin would result in the formation of a single composite particle with a single density prior to being placed in the wellbore. In other words, the combined particles would have a single size and a single density, which is contrary to the purpose and functionality of the invention of Martin. It should therefore be clear that the individual references teach away from the combination of the references as presented by the Examiner. Appellants note that Sielcken does not provide any teachings for or against the combination of Murphey '390, Martin, and Beck as Sielcken is directed towards a method for the preparation of an aldehyde and does not discuss particulates or hydrocarbon production. Specifically, the Examiner cites Sielcken for the alleged teaching of using a CSTR to carry out the continuous mixing process. (Final Office Action at 12-13). Therefore, Appellants respectfully assert that independent claims 18, 35, and 68 and their dependent claims are not rendered obvious by the combination of Murphey '390, Martin, Beck, and Sielcken. Accordingly, Appellants respectfully request withdrawal of this rejection with respect to claims 18-19, 25-26, 28, 31-32, 35-36, 42-43, 45, 48-49, 65-66, 68-75, and 77.

The Examiner respectfully disagrees with this argument. Murphey '390 teaches continuously mixing an aqueous gelled carrier liquid, uncoated particulate material, a hardenable polyepoxide resin, and an improved surfactant. Thus, Murphey '390 reads on any order of mixing ingredients including claimed mixing order. Martin teaches benefits of using particles having different densities, and Beck teaches benefits of adhering small particles of reduced density to large dense core particles. Therefore, it would have been obvious to one of ordinary skill in the

art to use composite particles in Murphey '390 having large dense core particles coated with small particles of reduced density to achieve benefits as taught by Martin and Beck.

D. Rejection of Claims 26, 43 and 74 under 35. U.S.C. § 103(a) over Nguyen in view of Martin, Beck, Sielcken, Murphey '390 and Murphey '988

Appellants submit that there is no suggestion or motivation to combine the teachings of Nguyen with the teachings of Beck. Also as discussed above, the references teach away from the combination of Murphey '390, Martin, and Beck, with or without Sielcken. The teachings of Murphey '988 do not make up for the deficiencies in the proposed combination. Specifically, the Examiner cites Murphey '988 for the alleged teaching of ethylene glycol butyl ether as a solvent for dissolving epoxy resins. (Final Office Action at 13). Murphey '988 does not provide a suggestion or motivation to combine the teachings of Nguyen and Beck. Similarly, Murphey '988 does not counteract the disparate teachings of Murphey '390, Martin, and Beck, with or without Sielcken that teach away from a combination of the references. Thus, Murphey '988 does not make up for the deficiencies with either of these combinations. The combinations of Nguyen in view of Martin and Beck, and/or in further view of Sielcken, or Murphey '390 in view of Martin, Beck, Sielcken, and Murphey '988 cannot obviate claims 26, 43, and 74. Accordingly, for at least these reasons, Appellants respectfully request withdrawal of this rejection with respect to claims 26, 43 and 74.

The Examiner respectfully disagrees with this argument for the reasons discussed above.

E. Rejection of Claims 28-29, 45-46 and 75-76 under 35 U.S.C. § 103(a) over Nguyen in view of Martin and Beck or over Nguyen in view of Martin and Beck, further in view of Sielcken or over Murphey '390, in view of Martin and Beck, further in view of Sielcken, and further in view of McDaniel

Appellants submit that there is no suggestion or motivation to combine the teachings of Nguyen with the teachings of Beck and the references teach away from the combination of Murphey '390, Martin, and Beck, with or without Sielcken. Moreover, the teachings of McDaniel do not make up for the deficiencies in the proposed combination. Specifically, the Examiner cites McDaniel for the alleged teaching of a functional equivalency among resins. (Final Office

Action at 14). McDaniel does not provide a suggestion or motivation to combine the teachings of Nguyen and Beck. Similarly, McDaniel does not counteract the disparate teachings of Murphey '390, Martin, and Beck, with or without Sielcken that teach away from a combination of the references. Thus, McDaniel does not make up for the deficiencies with either of these combinations. The combinations of Nguyen in view of Martin and Beck, and/or in further view of Sielcken, or Murphey '390 in view of Martin, Beck, Sielcken, and McDaniel cannot obviate claims 26, 43, and 74. Accordingly, for at least these reasons, Appellants respectfully request withdrawal of this rejection with respect to claims 28-29, 45-46 and 75-76.

The Examiner respectfully disagrees with this argument for the reasons discussed above.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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